Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Original) A method for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, comprising:

detecting the inter-vehicle distance;

photographing a video image of a vehicular forwarding zone;

detecting a plurality of edges including at least a part of the preceding vehicle from the photographed video image;

detecting an inter-edge spacing of mutually opposing edges from the detected video image; and

calculating a present inter-vehicle distance of the vehicle to the preceding vehicle at a present time point from a previous inter-vehicle distance calculated thereby at a previous time point at which the inter-edge spacing of the mutually opposing edges has previously been detected and the inter-edge spacings at the previous time point and at the present time point.

2.   (Currently Amended) A method for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 1, wherein the mutually opposing edges are one of longitudinally opposing edges with respect to an image screen and laterally opposing edges with respect thereto, whichever has the larger ~~whose~~ average gray level ~~is larger than the other~~.

3.   (Currently Amended) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein the mutually opposing edges are detected from the plurality of edges, and wherein when detecting the mutually opposing edges from the plurality of edges ~~on the video image~~, if the detected mutually opposing edges are present within a predetermined range of the photographed video image, detecting new mutually opposing edges at an outside of [[a]] the predetermined range of ~~a previous~~ the photographed

video image ~~previously photographed, within the predetermined range of which the mutually opposing edges whose inter-edge spacing is to be detected are present~~.

4.   (Original) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein, when calculating the present inter-vehicle distance, starting a calculation on the present inter-vehicle distance to the preceding vehicle from a time point at which the detected inter-vehicle distance falls within a predetermined range of distance, the predetermined range being modified according to a vehicular running state.

5.   (Original) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 4, wherein the vehicular running state is a vehicular velocity.

6.   (Currently Amended) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein when detecting the inter-edge spacing of the detected mutually opposing edges, detecting the inter-edge spacing between the mutually opposing edges of one of longitudinally opposing edges or laterally opposing edges detected on the photographed video image, whichever has fewer detected edges ~~whose detected number is less than the other~~.

7.   (Currently Amended) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein when detecting the inter-edge spacing of the mutually opposing edges from the photographed video image, ~~between the vertical edges detected within the image when~~ if the detected inter-vehicle distance is longer than a predetermined distance or ~~the interval of edges detected on the photographed image are~~ the inter-edge spacing to be detected is narrower than a predetermined width, detecting an inter-edge spacing between vertical edges detected within the image.

8.   (Currently Amended) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein when detecting the inter-edge spacing of the mutually opposing edges, if ~~and~~ a vehicular velocity is higher than a predetermined vehicular velocity, detecting ~~the~~ an inter-edge spacing of ~~the~~ laterally opposing edges detected on the photographed video image.

9.   (Original) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein when detecting the inter-edge spacing between the mutually opposing edges, detecting laterally opposing edges on the photographed image when the vehicle is turning.

10.   (Currently Amended) A method for estimating an inter-vehicle distance for an automotive vehicle as claimed in claim 1, wherein when detecting the inter-edge spacing of the mutually opposing edges, selecting one of the inter-edge spacings of longitudinally opposing edges and horizontally opposing edges, whichever has a greater whose magnitude of inter-edge spacing is wider than the other is selected.

11.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, comprising:

an inter-vehicle distance detecting section that detects the inter-vehicle distance;

a photographing device that photographs a video image of a vehicular forwarding zone;

an edge detecting section that detects a plurality of edges including at least a part of the preceding vehicle from the photographed vide video image by the photographing device and detects an inter-edge spacing of mutually opposing edges from the detected image; and

an inter-vehicle distance calculating section that calculates a present inter-vehicle distance from the vehicle to the preceding vehicle at a present time point fro from a previous inter-vehicle distance calculated thereby at a previous time point at which the inter-edge spacing of the mutually opposing edges has previously been detected and the inter-edge spacings at the previous time point and at the present time point.

12.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the mutually opposing edges are detected from the plurality of edges, and wherein if the detected mutually opposing edges are present within a

predetermined range of the video image, the edge detecting section ~~comprises a new edge detecting section that~~ detects new mutually opposing edges at an outside of [[a]] the predetermined range of ~~a previous~~ the video image ~~previously photographed by the photographing device within the predetermined range of which the mutually opposing edges whose inter-edge spacing is to be detected are present~~.

13.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the inter-vehicle distance calculating section starts ~~the~~ a calculation of the inter-vehicle distance when the inter-vehicle distance detected by the inter-vehicle distance detecting section falls within a predetermined range of distance and comprises a predetermined range modifying section that modifies the predetermined range of distance according to a running state of the vehicle.

14.   (Original) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 13, wherein the running state of the vehicle is a vehicular velocity.

15.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein the edge detecting section detects the inter-edge spacing of the mutually opposing edges from one of the vertical edges and horizontal edges detected on the video image photographed by the photographing device, whichever has fewer detected edges ~~whose detected number is less than the other~~.

16.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein ~~the edge detecting section comprises a horizontal edge inter-edge spacing detecting section that detects the inter-edge spacing of the horizontal mutually opposing edges detected on the video image photographed by the~~

~~photographing device~~ when the inter-vehicle distance detected by the inter-vehicle distance detecting section is ~~longer~~ <u>shorter</u> than a predetermined inter-vehicle distance or when the inter-edge spacing <u>to be detected</u> ~~between the mutually opposing edges~~ is wider than a predetermined inter-edge spacing<u>, the edge detecting section detects an inter-edge spacing of horizontal mutually opposing edges detected on the video image photographed by the photographing device.</u>

17.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein ~~the edge detecting section detects the inter-edge spacing between the vertically opposing edges~~ when the inter-vehicle distance detected by the inter-vehicle distance detecting section is longer than a predetermined inter-vehicle distance or when the inter-edge spacing <u>to be detected</u> ~~between the mutually opposing edges~~ is narrower than a predetermined inter-edge spacing<u>, the edge detecting section detects an inter-edge spacing between vertically opposing edges</u>.

18.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein the edge detecting section detects ~~the~~ <u>an</u> inter-edge spacing between ~~the~~ horizontally opposing edges detected on the video image photographed by the photographing device when a vehicular velocity of the vehicle is higher than a predetermined vehicular velocity.

19.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein the edge detecting section detects ~~the~~ <u>an</u> inter-edge spacing between ~~the~~ horizontally opposing edges detected on the video image photographed by the photographing device when the vehicle is turning.

20.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein the edge detecting section comprises a selector that selects one of the inter-edge spacings of the vertical edges and the horizontal edges which is longer than ~~the other~~ another inter-edge spacing.

21.   (Original) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, as claimed in claim 11, wherein the inter-vehicle distance calculating section outputs the inter-vehicle distance calculated thereby to an adaptive cruise control system.

22.   (Currently Amended) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle, comprising:

inter-vehicle distance detecting means for detecting the inter-vehicle distance;

photographing means for photographing a video image of a vehicular forwarding zone;

edge detecting means for detecting a plurality of edges including at least a part of the preceding vehicle from the photographed vide image by the photographing means and for detecting an inter-edge spacing of mutually opposing edges from the detected image; and

inter-vehicle distance calculating means for calculating a present inter-vehicle distance from the vehicle to the preceding vehicle at a present time point ~~fro~~ from a previous inter-vehicle distance calculated thereby at a previous time point at which the inter-edge spacing of the mutually opposing edges has previously been detected and the inter-edge spacings at the previous time point and at the present time point.

23.   (New) A method for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle as claimed in claim 1, wherein when calculating the present inter-vehicle distance of the vehicle to the preceding vehicle at the present time point, calculating the present inter-vehicle distance in accordance with the following equation:

$$DC = Dout_0 \times EW_0/EW,$$

wherein DC denotes the present inter-vehicle distance of the vehicle, $Dout_0$ denotes the previous inter-vehicle distance, EW_0 denotes the inter-edge spacing at the previous time point, and EW denotes the inter-edge spacing at the present time point.

24.   (New) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle as claimed in claim 11, wherein the inter-vehicle distance calculating section calculates the present inter-vehicle distance from the vehicle to the preceding vehicle at the present time point according to a ratio between the inter-edge spacings at the previous time point and at the present time point.

25.   (New) An apparatus for estimating an inter-vehicle distance of an automotive vehicle to a preceding vehicle which is running ahead of the vehicle as claimed in claim 21, wherein the inter-vehicle distance detecting section is a radar and the photographing device is a camera, wherein the inter-vehicle distance calculating section outputs the inter-vehicle distance calculated by the inter-vehicle distance calculating section to the adaptive cruise control system when the inter-vehicle distance detected by the radar is shorter than a predetermined distance, and wherein the inter-vehicle distance calculating section outputs the inter-vehicle distance detected by the radar to the adaptive cruise control system when the inter-vehicle distance detected by the radar is larger than the predetermined distance.